POLICY RESEARCH WORKING PAPER 1496

Reviving Project Appraisal at the World Bank

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How can the World Bank improve the economic analysis of its projects? By shifting from precise rate of return calculations to a broader examination of the rationale for public provision and focusing on three critical aspects: the counterfactual private sector response, the fiscal impact, and the fungibility of lending.

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Summary findings

Devarajan, Squire, and Suthiwart-Narueput focus on two broad questions:

• What is the proper role for project evaluation in today's world, where countries have reduced major economic distortions and are reconsidering the role of the state?

• Besides project evaluation, how else can economic analysis ensure high-quality projects?

The authors argue for a shift in the emphasis of project evaluation away from a concern with precise rate of return calculations to a broader examination of the rationale for public provision. In this context, three areas critical for proper project appraisal are the counterfactual private sector supply response, the fiscal impact, and the fungibility of lending.

• *Counterfactual private sector supply response.* Any type of cost-benefit analysis — be it in the public or the private sector — requires the project evaluator to specify the counterfactual: what would the world have looked like in the absence of the project? Since World Bank projects are public sector projects, the relevant counterfactual involves assessing what the private sector would have otherwise provided, and the relevant magnitude for evaluation purposes is the *net* contribution of the public project. Failure to consider explicitly the private sector counterfactual during evaluation biases the lending mix of the Bank away from projects with strong public good characteristics toward projects with private good characteristics.

• *Fiscal impact.* Applying the private sector counterfactual would lead the Bank to undertake projects with a reasonable case for public intervention, such as basic infrastructure, primary education, and rural health. These projects typically share the characteristic that costs are borne by the public sector while benefits are enjoyed by the private sector. But in the absence of nondistortionary, lump sum taxes, there is likely to be a positive marginal cost of taxation and a premium on public income. Since the Bank has not used such a premium and treats public costs and private benefits equally, it has systematically *overestimated* the net benefits of these projects.

• *Fungibility of lending.* Project-specific appraisal can at best assess only the rate of return and the acceptability of the project being appraised. This limitation is problematic because the project might have been undertaken even without Bank financing. If that is the case, the Bank is actually financing some other project — one *not* subject to appraisal by the Bank — that would not have been in the investment program without Bank financing. This problem arises because financial resources are fungible to some extent. One way to alleviate this concern is to conduct public expenditure reviews *before* embarking on the appraisal and financing of specific projects. Furthermore, financing a portion of the government's sectoral investment program may be more effective than project-specific lending.

This paper — a joint product of the Public Economics Division and the Office of the Director, Policy Research Department — is part of a larger effort in the department to improve the allocation of public expenditures in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cynthia Bernardo, room N10-053, telephone 202-473-7699, fax 202-522-1154, Internet address prdpe@worldbank.org. August 1995. (29 pages)

REVIVING PROJECT APPRAISAL AT THE WORLD BANK

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REVIVING PROJECT APPRAISAL AT THE WORLD BANK

"We have found that the extent to which [social cost-benefit analysis is] used and [has] real influence is not great, even in the World Bank."

Little and Mirrlees, 1991

Given this assessment of current practice by Little and Mirrlees, what steps, if any, should the World Bank take to put its appraisal of projects on a firmer analytical footing? In addressing this question we steer clear of the finer points of project appraisal -- how to measure externalities, how to estimate shadow prices -- and focus instead on two broad questions:

- What is the proper role for project evaluation in today's world where countries have reduced major economic distortions and are reconsidering the role of the state?

We argue that this change in circumstances calls for a shift in the emphasis of project evaluation *away* from a concern with the precision of rate-of-return calculations to a broader examination of the rationale for and merit of public-sector provision.

The second question also moves away from a focus on rate-of-return calculations:

- Besides project evaluation, how else can economic analysis be used to ensure high-quality projects?

Here we suggest that pre-appraisal, sectoral analysis and especially reviews of sectoral public expenditure programs can contribute substantially to the quality of projects approved by the World Bank. We address these two questions in Sections II and III of the paper respectively. We begin in Section I with an assessment of the conclusion drawn by Little

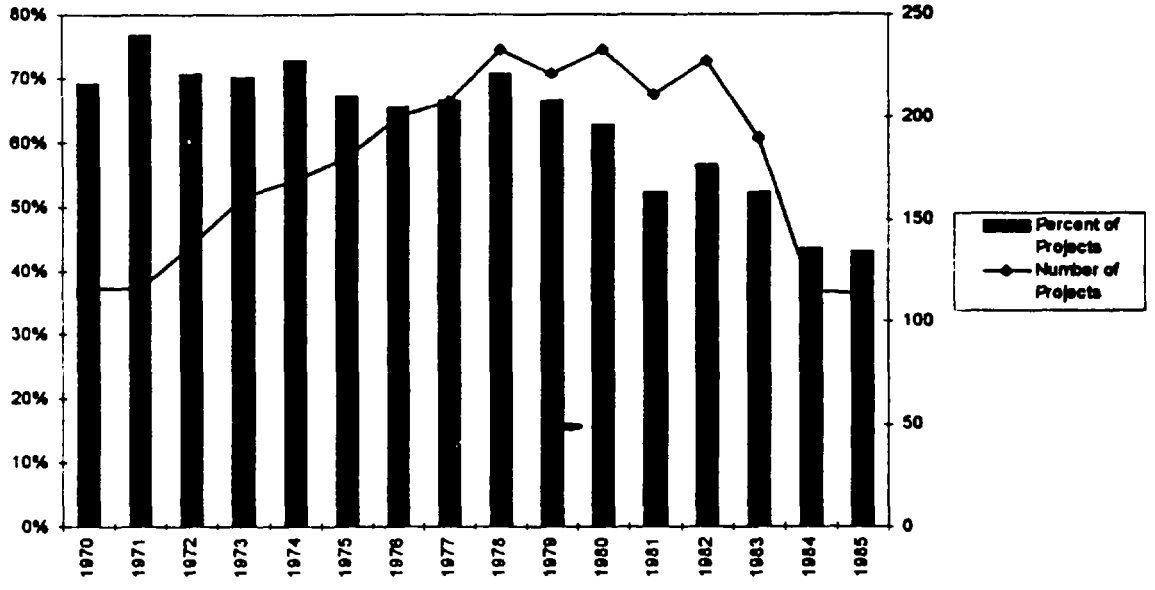
and Mirrlees regarding the current state of project evaluation in the World Bank. Section IV offers some concluding thoughts.

I. THE CURRENT STATE OF PROJECT EVALUATION AT THE WORLD BANK

Before turning to a more qualitative assessment, we examine the proportion of projects subject to evaluation and show how this has changed over time. For this we need to categorize projects according to their year of *approval*, that is, when the evaluation, if any, was done. Unfortunately, information on whether a project appraisal includes a rate-of-return calculation or not only becomes available on a systematic basis when the project is reviewed by the Bank's Operations Evaluation Department at the time of *completion* (that is, when the project loan is fully disbursed). Thus, the number of projects for which we have information falls off dramatically after 1985 -- from 114 in 1985 to only 5 by 1989. We therefore confine the analysis to the 15-year period from 1970-85. For obvious reasons, we also confine the analysis to *investment* projects -- that is, we exclude all Structural and Sectoral Adjustment Operations, and all Technical Assistance Operations.

Figure 1 indicates a significant drop in the percentage of World Bank investment projects subject to the scrutiny of a rate-of-return calculation -- from almost 70 percent in 1970 to only slightly more than 40 percent in 1985. Most of the decline occurred in the 1980s. Taking 1980 as the swing year, the average share of projects subject to economic analysis fell from almost 70 percent in the preceding five years to about 50 percent in the subsequent five years. The trend is confirmed by the fact that in 1991, 51% of investment projects had rate of return calculations (World Bank, 1991).

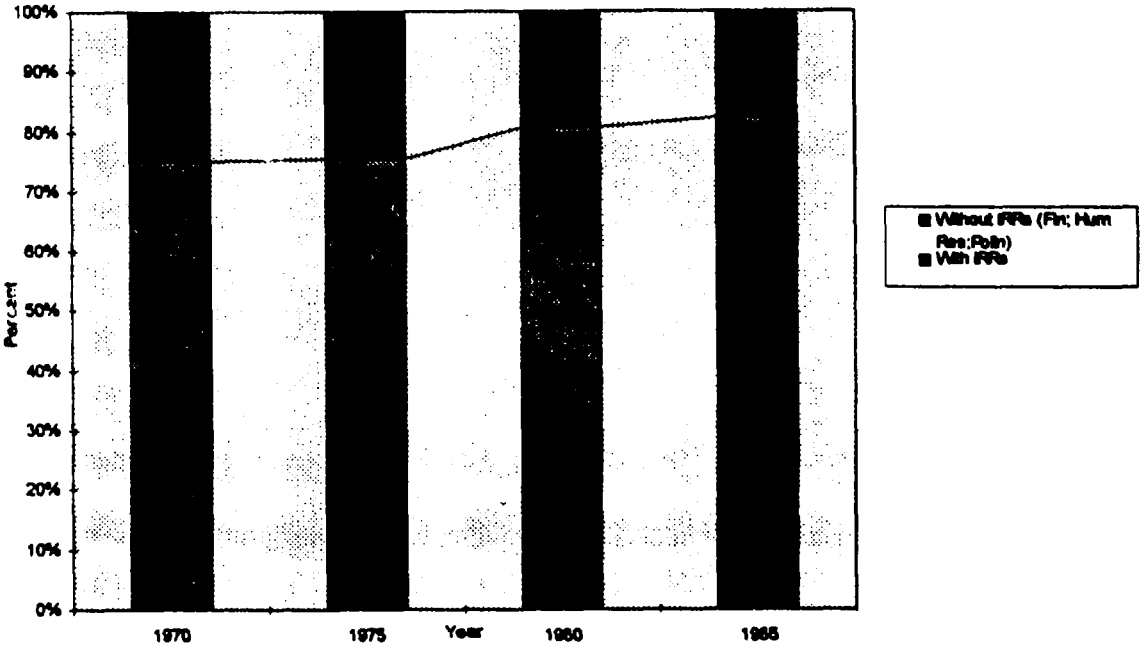
Figure 1: Projects with IRR, 1970-85
Percent of Total Number of Investment Projects



At least three developments could explain this phenomenon:

- *Sectoral Shifts.* Traditionally, the World Bank has not calculated rates of return for projects in the social or financial sectors. An increase in the number of projects in these sectors could therefore explain the declining use of project analysis. However, the data do not support this view (see Figure 2). Sectors where rates of return are usually calculated such as agriculture, energy, industry, telecommunications, and transport maintained (and in fact increased) their share in total projects approved in that period. What has happened is a *within-sector* decline in the use of economic analysis especially in agriculture, energy, industry, and transport (see Figure 3). Post-1985, sectoral shifts may have become more important as more of our

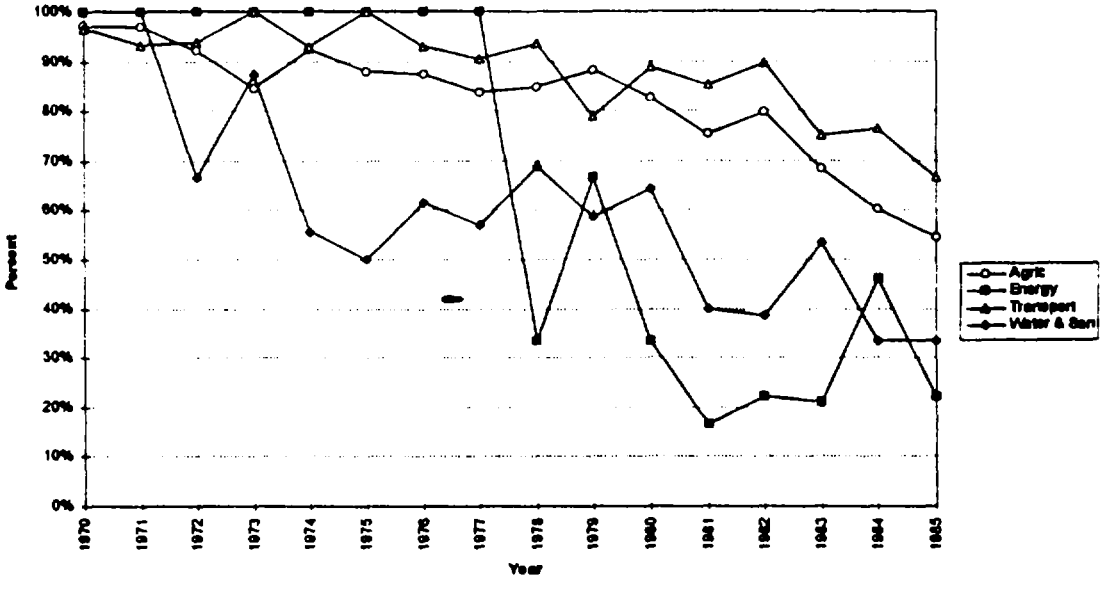
Figure 2: Sectoral Composition of Projects
Percent of Projects in Sectors With v. Without IRRs



lending has been allocated to the social sectors and the environment -- almost 20 percent of lending in 1994 compared with less than 8 percent in 1985.

- *Quality Control.* Prior to 1982 the World Bank had a fairly powerful Central Projects Department that set standards for project appraisal and reviewed the quality of appraisal reports. After 1982 the function of quality control was devolved to regional vice presidencies which were themselves the producers of the appraisal reports. The incentives implicit in this organizational structure were unlikely to encourage the use of rigorous appraisal techniques. At focus groups on project evaluation, staff identified several reasons for the poor quality of economic analysis,

Figure 3: Agriculture, Energy, Transport and Water & Sanitation Sectors
Percent of Projects with IRRs



including (1) pressure to deliver a given amount of lending within strict deadlines; and (2) the lack of anyone to lobby for the importance of economic analysis (Thieme, 1995).

- *Other Demands*. The decade of the 1980s saw the emergence of structural adjustment operations as an important and high-visibility activity for the World Bank. Between 1980-82 and 1986-88 the share of these operations in total lending increased from 7 to 24 percent. As a result, some of the Bank's best economists became absorbed in macroeconomic matters and

attention to the details of investment projects declined. Over time, the number of recruits trained in project analysis also declined.

While obviously judgmental, it appears from the above that shifts in the sectoral composition of investment lending have contributed little to the declining use of project analysis and that the answer probably lies more in changes in the degree of central quality control and the emergence of other demands on the time of economists. Interestingly, these new demands were aimed at removing the very distortions that shadow prices were intended to correct for. Furthermore, as we show later, a less distortionary policy environment is associated with an increased probability of project success, perhaps reducing the need for careful cost-benefit analysis.

Little and Mirrlees appear to be correct therefore in their view that the extent to which project analysis is used at the World Bank "is not great." But what about the quality of the analysis when it is used? Judgements on this point are difficult to make precisely because there is no mechanism of central quality control that could be expected to monitor performance on a consistent basis. Nevertheless, two comments can be made, one of which is specific to the approach advocated by Little and Mirrlees while the other is more general.

The specific point concerns the use of distributional weights and the marginal cost of public funds. The evidence is clear: other than in a few experimental exercises distributional weights and the marginal cost of public funds have not been part of project analysis in the World Bank. Before asking why, it is important to clarify a key difference between distributional weights and the marginal cost of public funds. The need for distributional weights arises because of a concern with *distribution* whereas the need for

the marginal cost of funds arises because of a concern with the *efficiency* of resource allocation. To elaborate, imagine that in making its decisions about public investments the government decides to treat a marginal dollar accruing to each and every member of society as being equally valuable. This by itself is sufficient justification for the analyst to ignore *distribution weights*. Marginal benefits accruing to different members of society can be aggregated because they all have the same value. This decision notwithstanding, one might still want to incorporate the *marginal cost of public funds* through a premium on public relative to private income. Assume for example that at the margin public income is generated through a distortionary import tariff. Any project that makes a claim on public income therefore elicits a further increase in import tariffs. The increased tariffs will almost certainly impose a cost through its impact on the allocation of resources, which ought to be captured in the project appraisal. Despite the conceptual difference between the marginal cost of funds and distributional weights, the former was widely seen as just another element of the system of distribution weights and arguments for dropping distributional weights came to apply to the marginal cost of funds as well.

Why did the World Bank drop distributional weights (and by association the marginal cost of funds)? At least three reasons can be advanced:

- *Subjectivity*. The use of distributional weights requires a judgement about the value of marginal increases in income to different members of society which staff were extremely reluctant to make, even though they recognized that the use of equal weights for everybody was itself a value judgement.
- *Practicality*. Many staff held the view that the actual task of identifying who actually benefitted from a project was overwhelming.

- *Efficiency*. A more compelling argument took the view that, while government should clearly be concerned about the distribution of income, project selection was not the most efficient instrument for pursuing this goal. This argument would claim that it is much more important for example to ensure that the broad allocation of public expenditure to different spending categories is more or less right than to worry about who benefits from every single project.

These arguments together with the disappearance of central quality control and the emergence of new demands on the time of economists were sufficient to ensure that distributional weights were never seriously used in the World Bank. And as noted above the marginal cost of funds suffered a similar fate even though none of the arguments applied directly to the marginal cost of funds, which has a different conceptual rationale. We will return to this point later.

With distributional weights and the marginal cost of funds abandoned, we might characterize what remains of project evaluation at the World Bank, therefore, as the border price rule, discounting, and sporadic use of a standard conversion factor, sectoral conversion factors being rarely if ever used. Given this more limited scope, how good is the Bank's project analysis? A general assessment of quality is possible thanks to a special review that was undertaken of the 92 investment operations for which rates of return were calculated and that were approved by the World Bank's Board in 1991. The review tried to assess projects according to whether the underlying economic analysis was consistent with the calculations embodied in the rate of return. While obviously subjective, this approach rated the quality of project analysis as "good or better" for 55

percent of the projects, as "marginal or acceptable" for a further 29 percent, and as "poor" for the remaining 15 percent (World Bank, 1991).

That the ratings had some content is suggested by a follow-up study four years later which looked at the correlation between the rankings described above and the actual performance of the projects (World Bank, 1995). During implementation, supervision reports routinely provide a judgement on the likelihood that a project will be a failure. The probability that a project would be considered a failure dropped significantly as the quality of economic analysis at appraisal rose -- if the project analysis was rated good or better the probability of failure was judged to be less than 5 percent whereas it rose to more than 30 percent if the analysis was rated poor. Although this exercise is subject to criticisms of omitted variable bias (e.g., the quality of analysis could indicate a competent project manager), it is the first attempt that we know of to provide some assessment of the value of good project appraisal.

The same study also updated the 1991 assessment of quality with the following results. Of the 112 projects approved in calendar year 1993 and subject to cost-benefit analysis, 20 percent were rated good or better, 42 percent were rated average or acceptable, 25 percent were rated barely acceptable or marginal, and 13 percent were rated as poor, an outcome not unlike that of the 1991 study. Given the previous finding about the percentage of projects subject to rate-of-return analysis, and the current finding that little more than half of the appraisals were considered good or better, we conclude that only around 25 percent of projects are approved on the basis of satisfactory rate of return analysis.

II. PROJECT EVALUATION FOR THE 1990S

Given the disappointing assessment of current practice, how can we improve matters? Two steps seem worth pursuing -- a more rigorous assessment of the underlying rationale for public sector intervention, and a reconsideration of the role of the marginal cost of funds. Both arise from the changed circumstances in which project evaluation is to be practiced. We first describe these changes and then move to the specifics of our two proposals.

Changed Circumstances. When Little and Mirrlees wrote their book governments were expanding public investment rapidly and much of that investment was in industry and related sectors. Indeed the first version of their book published in 1969 was titled *Manual of Industrial Project Analysis*. At that time major distortions arising from trade policy and exchange rate policy were characteristic of most developing economies (see for example Little, Scitovsky, and Scott, 1970). It is not surprising therefore that an important focus for Little and Mirrlees was on techniques -- especially the use of border prices and conversion factors -- that addressed these concerns.

Moving into the second half of the 1990s, these concerns remain but in a much reduced form. Many countries are now grappling with the privatization of public enterprises rather than with new investment, and reforms of trade policy and exchange rate systems have reduced the distortions of most concern to Little and Mirrlees. In these circumstances, it may well be that the modest attention paid by the World Bank to sectoral conversion factors is a sensible allocation of the time of economists. On the other hand, more attention should be paid to the basic question of whether a project ought to be in the public sector or not. As we have noted, the composition of the World Bank's portfolio has

shifted to more emphasis on basic infrastructure, social services, and environmental projects for which the rationale for public-sector provision is strong. But, there are still many projects entering the portfolio that could well be shifted to the private sector.

At the same time, the importance of macroeconomic stability is now widely accepted as a prerequisite for sustained development. And a prudent fiscal policy is central to macroeconomic stability. It follows that projects that place a burden on the budget have to be reviewed with care. Fiscal balance will require that the budgetary costs of these projects be recouped through some other tax instrument, which in turn will introduce *distortionary costs* somewhere in the economy. These costs ought to be included in the evaluation of the project which was of course precisely the original rationale for the marginal cost of public funds. Moreover, as the composition of projects shifts in favor of those with a clear public sector rationale, we can expect that an increasing proportion of projects will be characterized by public costs and private benefits (see below). In these circumstances, the need for a careful assessment of budgetary impact and, in turn, of the distortionary cost of alternative sources of revenue will become greater.

Public-Private Choice. These changes -- greater scrutiny of what types of activities ought to be undertaken by the public sector and the emergence of a more rational exchange rate and tariff structure -- render the few aspects of the Little-Mirrlees approach that are practiced at the World Bank less important. Indeed, instead of a concern with the calculation of the rate of return for a public-sector project, interest is now focussed on whether a project ought to be in the public sector at all. However, the *principles* underlying Little-Mirrlees, not to mention other manuals on project evaluation (UNIDO [1972], Squire and van der Tak [1975]), can be applied to the changed circumstances and

new set of questions about the appropriate role of government. In particular, all the approaches to cost-benefit analysis require the project evaluator to specify the *counterfactual*: what would the world have looked like in the absence of the project? This principle is relevant whenever there is a private sector alternative to public provision.

To illustrate, assume that the government is contemplating an investment which produces private goods -- a shoe factory, say. One possible judgement regarding the counterfactual is that, in the absence of the public sector project, nothing would have happened. In this case, the analyst should focus on a comparison of the costs incurred by the project and the benefits it is expected to yield. The use of border prices and conversion factors would obviously be relevant. Assuming that the evaluation points to a positive net present value (NPV), the project would be accepted. But the appropriate counterfactual might be that the private sector would have produced the shoes anyway (assuming the enterprise is profitable). In this case, the relevant magnitude is the *net* contribution of the public shoe factory. The NPV of the public sector project over and above that of the private sector project (evaluated at shadow prices) may well be zero.[1]

While the shoe factory case may seem obvious, there are many World Bank projects where a private sector alternative appears feasible and yet no private-sector counterfactual was specified. A quick survey of the titles of projects approved by the World Bank's Board of Directors indicates that only 13 percent could be said to have an obvious public sector rationale while many others seemed to have a strong private-sector characteristic (see Table 1 for examples). Of course, the titles of projects are not an adequate basis for arriving at a definitive judgement, but it can reasonably be concluded that there is a need to consider the private-sector counterfactual more systematically.

Furthermore, the 1995 report notes that "In many cases, it was not possible to discern the *with* and *without* project situation on the basis of the information provided" in the appraisal report quite apart from whether a private sector alternative was considered (World Bank, 1995, p. 15).

Table 1: Sample of IBRD and IDA Projects with Clear v Unclear Public Component: 1994

Org.	Country	Project Title	Amount
		Projects with Clear Public Component	***$M***
IBRD	Algeria	Emergency Desert Locust Control Project	30.0
	Brazil	AIDS and STD Control	160.0
	China	Shanghai Environment	160.0
	Indonesia	Dame Safety Project	55.0
	Jamaica	Tax Administration Reform	13.2
	Mexico	Second Primary Education	412.0
	Morocco	Environmental Management	6.0
	Peru	Basic Health and Nutrition	34.0
IDA	Chad	Health and Safe Motherhood	18.5
	Gambia	Capacity Building for Environmental Management	2.6
	India	Maharashtra Emergency Earthquake Rehab	246.0
	Uganda	Sexually Transmitted Infections Project	50.0
		Projects with Unclear Public Component	
IBRD	Bulgaria	Water Companies Restructuring and Modernization	98.0
	China	Telecommunications Project	250.0
	India	Container Transport Logistics Project	94.0
	Korea	Financial Intermediation Project	100.0
	Malaysia	Second Rubber Industry Smallholders Dev. Auth.	70.0
	Papua New Guinea	Petroleum Exploration and Development Tech. Asst.	11.0
	Philippines	Leyte-Luzon Geothermal Project	113.0
	Romania	Industrial Development Project	175.0
	Tunisia	Private Investment Credit Project	50.0
IDA	Madagascar	Petroleum Sector Reform Project	51.9
	Mozambique	Gas Engineering Project	30.0
	Uganda	Cotton Subsector Development Project	14.0
Total 1994 IBRD and IDA Loans and Credits			20,836.0
IBRD and IDA Projects with Clear Public Component			2,747.3
Percentage of Total Loans and Credits with Clear Public Component			**13.2%**

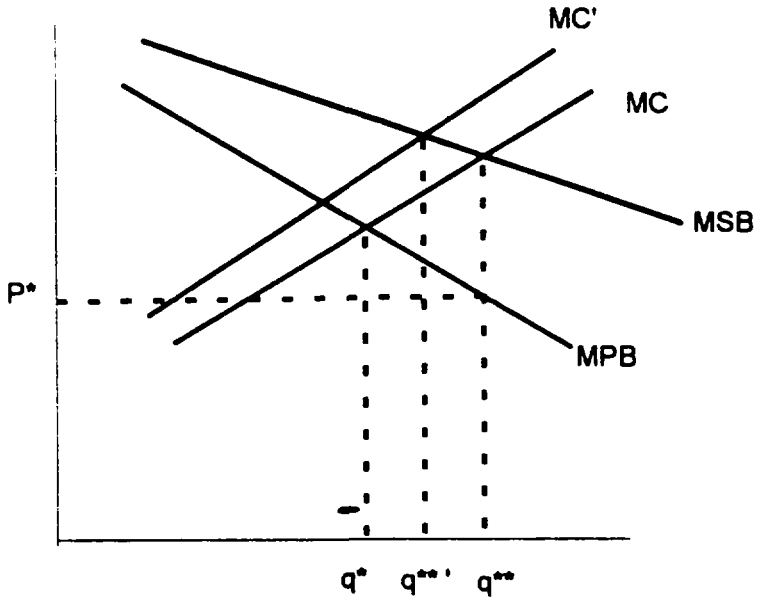
To be sure, specifying the private-sector counterfactual is not always straightforward. Yet, some principles can be invoked. First, if the project is producing a private good and is profitable at market prices so that there is good reason to believe the

private sector will undertake it, then the difference between the factual and counterfactual should be zero. In this case there is no advantage to having the project in the public sector and the point can probably be established without a serious evaluation.[2] Second, at the other extreme we have the case of pure public goods. Here there is no prospect of private provision and hence no need to worry about a private-sector counterfactual. But pure public goods -- defense, for example -- are relatively rare. And, third we have the case of market failure arising from externalities, indivisibilities, information failures, etc. Here there may be a case for government intervention, but the private-sector counterfactual will not necessarily be zero. Since this is the case which is likely to be most relevant to World Bank projects, we consider it in more detail.

When we have a market failure arising from say a positive externality, the private sector will provide some of the good, but not the socially optimal amount. In Figure 4, which is drawn for non-tradeables, the positive externality is captured by the marginal social benefit (MSB) curve lying above the marginal private benefit (MPB) curve. An example would be secondary education, which many would claim has significant positive externalities, although private secondary schools exist alongside public ones in many countries. In Figure 4, the private sector would provide up to q^* of the good on its own. The socially optimal amount, however, is q^{**}. (In the shoe factory example referred to earlier, the MSB and MPB curves coincide, so that $q^* = q^{**}$.)

In evaluating projects in sectors such as these, the analyst needs to establish two points. First, that public provision results in a greater supply of the good than would have occurred with just private sector provision (that is, overall supply should exceed q^*). If this were not the case, public provision would simply be crowding out private providers.

Figure 4: Public Provision and the Private Sector Counterfactual



The private-sector counterfactual would be equal to the project (assuming costs are the same) and the NPV of the public sector project would be zero. Second, we should ensure that the project does not result in total supply of the good beyond q** (that is, beyond the point where marginal costs exceed marginal social benefits). Thus, the relevant range for public provision in this sector is between q* and q**. We deal with the former (q*) here because it bears on the issue of the private sector counter factual and confront the latter (q**) in our discussion of the marginal cost of funds.

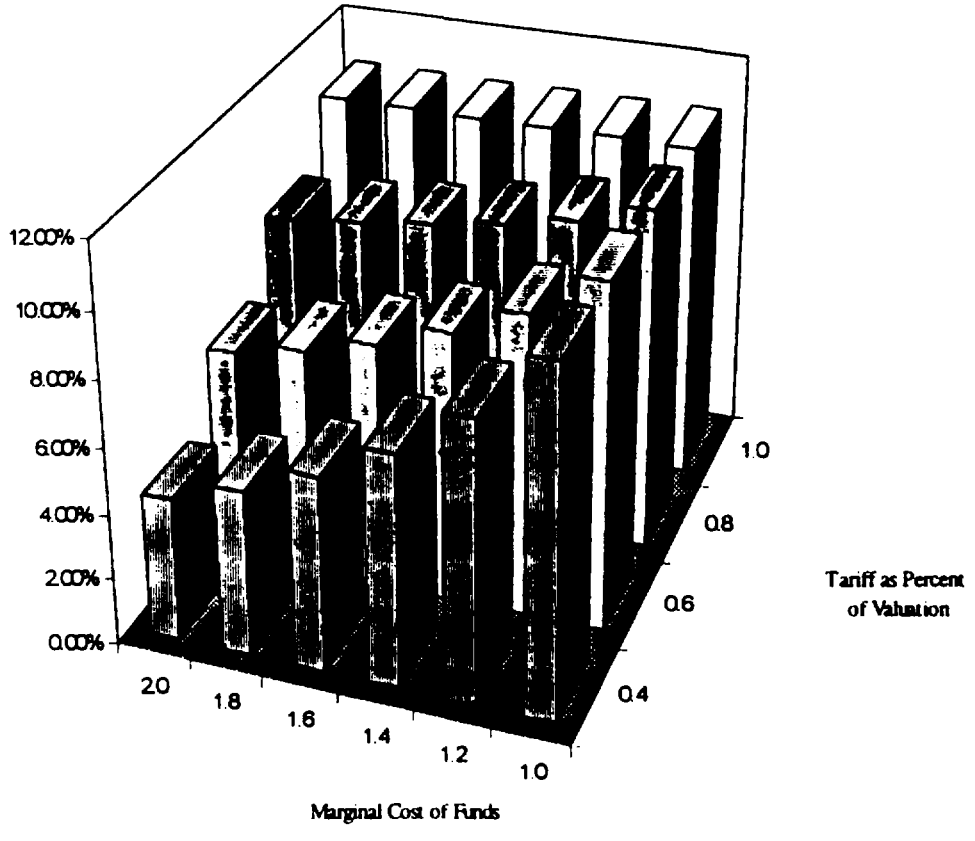
Determining q*, an unobserved counterfactual, is difficult but it may be feasible in many cases to arrive at an estimate using information on willingness-to-pay. Appraisal of the Leyte-Luzon Geothermal Project in the Philippines, a US$ 1.3 billion project, illustrates the idea. The economic analysis of this project includes an estimate of consumer willingness-to-pay based on current bulk energy tariffs in the Luzon system. In turn, this

allows an assessment of what the private sector would have provided and determines the *minimum* level of public sector supply. And as we shall see next it also has important implications for tariff policy.[3]

Revisiting the Marginal Cost of Funds. The marginal cost of funds highlights the need to ensure that public sector projects attempt to recover as much of their costs as possible from the private sector (i.e., that an appropriate pricing strategy accompany the project's implementation). In Figure 5, we draw again on the Geothermal Project in the Philippines to show how a project's internal rate of return (IRR) changes with different pricing policies and different levels of the marginal cost of funds. We calculate the IRR of the project for different values of the marginal cost of funds and different pricing policies. If the electricity is sold at its market value and/or there is no premium on public income (i.e., the marginal cost of funds is one), the IRR for the project is 10.5 percent. But any other combination of pricing policy and premium would result in a substantially lower IRR. In the extreme case, when the electricity is sold at 40 percent of the market price, and the premium is 100 percent (i.e., the marginal cost of funds is two), the IRR drops to 4.3 percent, or by 60 percent. In value terms (at a 10% discount rate), the project's NPV drops from over $29 million to -$645 million.

In the case of this power project it is reasonable to expect that full cost recovery is the appropriate goal, the rationale for public provision presumably being the size and indivisible nature of the project which make private provision difficult. Thus, the premium may not be especially critical except as a reminder that less than full cost recovery imposes distortionary costs elsewhere in the economy. But, for many of those projects with a reasonable case for public intervention -- basic infrastructure, primary

Figure 5: Leyte-Luzon Geothermal Project
IRR by Marginal Cost of Funds and Tariff
(Base Case IRR =10.5%)



education, rural health, and so on -- full cost recovery is not likely to be a desirable goal. Thus, these projects will share a common characteristic: costs are borne by the public sector, benefits are enjoyed by the private sector. If there is a premium on public income (which is almost always the case, since governments resort to distortionary taxation for revenue), then the net present value of these projects will be lower than otherwise calculated. Put another way, since the World Bank has not used a premium (that is public costs and private benefits are treated equally), *it has systematically overestimated the NPV of these projects* (see Squire, 1989).

Consider again Figure 4. To the extent that there is a premium, the fact that the government suffers a fiscal cost (and hence a real cost implied by the need to generate revenue through some other means) causes the overall cost of the project to increase, shifting the MC curve upward to MC'. The optimal supply will now be at a level below q**, call it q**'. What is the relationship between this optimal supply level and the decision to accept or reject the project? We would reject projects in the interval (q**',q**) even if they recovered costs up to the private sector's willingness to pay.

Of course, the analyst will never know the exact value of the externality. It is, however, possible to estimate the cost associated with raising revenue from the least-distortionary tax instrument. Estimates for developed countries range from 32 to 47 percent in the U.S. to 120 percent in Sweden. Browning [1987] discusses four key factors that interact to determine the marginal welfare cost and account for the wide variation in estimates. These include the elasticity of labor supply; the marginal tax rate; how (balanced-budget) government spending affects actual labor earnings;[4] and the progressivity of the change in the tax structure that produces the incremental tax revenue.[5] In developing countries, the marginal cost of funds is likely to be even higher to the extent that these countries have access to a more limited set of tax instruments (e.g., trade taxes in low-income countries) which are highly distorting. On the other hand, if as some believe, substitution elasticities are lower in developing countries, the deadweight loss from taxation will also be lower. Even in the absence of country-specific estimates, we suggest that it is still worth showing the net impact of the project on the government's budget and conducting sensitivity analysis for a plausible range of the marginal cost of funds.

III. Improving Project Quality Indirectly

Focussing on rates of return or the immediate economic analysis of projects is one means and presumably an important one of improving the quality of projects. But other approaches may be as or more important. Here we examine two possibilities. The first is the positive counterpoint to the earlier observation that a concern with macroeconomic and structural reforms diluted the time and effort devoted to project evaluation. The consequent improvement in policy may have affected project performance positively. And the second emphasizes the importance of sector studies, the existence of which may improve the quality of future projects in that sector. In the following we explore both possibilities, offering some empirical evidence in each case.

The Policy Environment. To investigate the relationship between rates of return and the policy environment, Kaufmann (1991) looked at 1,200 World Bank projects in 58 developing countries. He linked the reestimated rate of return with various indices of policy-related distortions. The broad pattern is shown in Table 2: the lower the distortion, the higher the project's rate of return. This pattern is confirmed by his econometric estimation (which further controlled for country-specific factors, external shocks, etc.). For most of the policy distortions, a large change in the index is associated with a 3 to 7 percentage point difference in the rate of return. Furthermore, he showed that countries which moved from high to low distortions significantly improved the rate of return to their projects.

Table 2: Economic Policies and the Performance of Projects

Policy Distortion	Average ERR	Percent Unsatisfactory (Social Sector Projects)
Trade Restrictions		
Highly restrictive	13.20	28.10
Nonrestrictive	19.00	0.00
Exchange Rate		
Highly overvalued	8.20	37.00
Slightly overvalued	17.70	17.40
Real Interest Rate		
Negative	15.00	29.40
Positive	17.30	17.50
Fiscal Deficit		
High	13.40	29.30
Low	17.80	11.30
Price Distortions of Tradeables		
High distortions	15.80	25.70
Low distortions	17.40	14.80

Source: Kaufmann (1991); Kaufmann and Wang (1995).

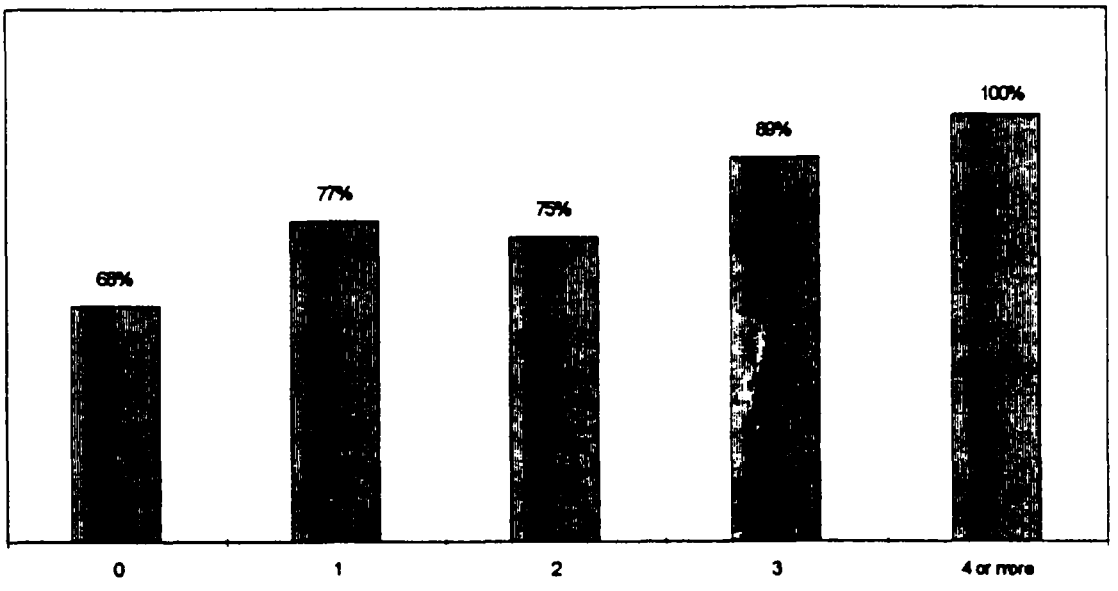
These results are both troubling and reassuring. They are troubling insofar as project evaluation techniques are in principle supposed to incorporate existing policy distortions. Had the shadow prices for these projects been properly calculated, and appropriate project selection criteria followed, there should be no relationship between policies and rates of return. However, as we have seen, these techniques were used only on a limited basis. What these results indicate is that the "costs" of not calculating the proper shadow prices are greater the more distorted is the economy. As such this confirms the appropriateness of the original Little and Mirrlees focus on key distortions and, by the same token, our suggestions to reconsider the emphasis in a changed world. At the same time, the Kaufmann results are reassuring in that the World Bank's increased emphasis on

policy reform (possibly at the expense of better project analysis) may have yielded an unintended benefit: better returns on projects.

Kaufmann and Wang (1995) undertook a similar analysis for social-sector projects, where instead of rates of return (which are not usually calculated for projects in these sectors), they use an *ex post* measure of the project's "success". Again, they find that the severity of the various distortions has a significant effect on project success with the percentage of unsatisfactory projects typically doubling as one moves from a low-distortion to a high distortion environment (see the second column in Table 2).

Sectoral Analysis. The World Bank routinely carries out economic and sector work (ESW) on its client countries. Some recent econometric work (Schneider, 1995) shows that the number of ESW reports on a country or sector contributes significantly to project success in that country/sector.[6] The percentage of successful projects (as determined by the Bank's Operations Evaluation Department at project completion) rises from 69 to 100 when the number of ESW reports increases from zero to four or more (see Figure 6). Schneider's econometric results confirm that this relationship is statistically significant. Controlling for other factors, he concludes that one ESW report in a particular country and sector increases the probability of a project's success by nine percentage points, while two reports would increase it by sixteen points.

Figure 6: Economic and Sector Work (ESW) and Project Success
Percent of Successful Projects*



** For 431 Projects assigned PCR ratings over FY93 to October 94.*
Source: Schneider, "Economic Sector Work and Results on the Ground," Table 1.

Included in the Bank's ESW are reviews of public expenditures in particular sectors or the country as a whole. The reviews can be, and in some cases have been, used to inform project selection in the country or sector. These sectoral reviews are important because project-specific appraisal reports can (at best) only assess the rate of return or acceptability of the *project being appraised*. This is problematical for two reasons both of which are especially important for multilateral lending agencies. First, the project being appraised may have been undertaken without external financing from a multilateral agency. In this case, the external funding is actually financing some other project which without the financing would not have been in the investment program. This problem arises because financial resources are *fungible* at least to some extent. It is unlikely that the

projects evaluated by the Bank are those marginal projects which would otherwise have not occurred. For the 99 projects it evaluated in 1993, the Operations Evaluation Department found an average economic rate of return of 21% (World Bank, 1994).This average rate of return appears too high to indicate marginal projects. And second, even if the project would not have been in the investment program without external funding, there is no guarantee that it is the *best* of all those projects not currently in the program because of lack of financing. Yet the latter is the relevant question if the World Bank is to maximize the development impact of its lending.

The above argument calls for sector-wide reviews prior to project-specific appraisal and financing and perhaps explains an important part of the observed link between sectoral analysis and subsequent project success. To illustrate consider two examples of sectoral public expenditure reviews (PERs). The Agricultural Expenditure Review of India (Pradhan and Pillai-Essex, 1993) examined several agricultural programs as projects and calculated their economic rate of return. It concluded that two programs -- a fertilizer subsidy and a crop production scheme -- had a zero rate of return because there was no justification for public provision of these goods (the benefits accrued directly to the individual farmers). Yet, the bulk of central-government expenditures were going to these two schemes. The study also pointed to the high rates of return in groundwater irrigation and extension services, recommending a reorientation of public expenditures in that direction. Similarly, an Infrastructure Public Expenditure Review of Peru (Humplick and Paterson, 1994) calculated the economic rate of return of expanding each of the major road links in Peru. The results showed a large variation in the IRR. Using a cutoff rate of 12

percent, the report was able to recommend dropping several road expansion projects, leading to a $275 million reduction in the government's road investment program.

These reviews actually go beyond setting a good foundation for subsequent project appraisal -- *they also improve the overall quality of the sectoral investment program.* Moreover, if the result is a satisfactory program, then the specific project financed and appraised in depth by the World Bank becomes less important. Rather, the Bank could have the greatest development impact by associating itself with that project where its knowledge and technical expertise is likely to be of most value. Alternatively, the World Bank could finance a time-slice of an agreed sectoral expenditure program, an option that is receiving greater attention in the Bank.

Furthermore, sectoral expenditure reviews can shed light on the two elements which we have identified as crucial for project evaluation in the 1990s, namely, the private-sector counterfactual and the marginal cost of funds. In reviewing the government's expenditure program within a sector, a sectoral expenditure review should identify areas where the private sector is providing, or can provide, the goods and services in question. For instance, a review of public expenditures in the health sector of Malaysia (World Bank, 1992) noted that 62 percent of spending by the Ministry of Health was on medical care (mostly private goods) and only 23 percent was on public health while the latter had a higher marginal impact on health status.[7] While sectoral expenditure reviews would not calculate the premium on public income, PERs that cover the entire government budget could in principle do so, insofar as they evaluate the government's budget constraint as part of the macroeconomic framework. At the very least, PERs should

identify those countries where the gains from applying the marginal cost of funds in project evaluation -- or the losses from not doing so -- are the greatest.

IV. Conclusion

To some extent, the changed circumstances noted above vindicate the relatively limited attention the World Bank has paid to project appraisal. At the same time those changed circumstances have pointed to new priorities and raised old concerns that are not adequately addressed at present. In two areas we conclude that continuation of current practice with in one case some tightening on quality seems appropriate:

- *Distributional Weights.* The view that other instruments, especially the broad allocation of public expenditures and tax policy, are able to influence the distribution of income more efficiently than project selection, coupled with the practical difficulties of identifying income-specific project beneficiaries leads to the conclusion that it is not worth revisiting the issue of distributional weights.
- *Shadow Prices.* The use of border prices, a discount rate, and a standard conversion factor should be routine practice. Given the Kaufmann results, this point is especially important where economy-wide distortions remain significant. In addition, where the yes-no decision proves sensitive to the value of the standard conversion factor, further disaggregation -- sectoral conversion factors -- would be required.

More importantly, we suggest on the basis of this review that there are three areas where the World Bank should think seriously about improving its analysis in the interests of both its development impact and the quality of its portfolio:

- *Public versus Private*. In as much as the World Bank is still financing projects that appear to be producing private goods, a greater effort should be made to assess the feasibility of private sector alternatives, including those that would prevail under regulatory or price (tax-cum-subsidy) policies. And even where there is a clear rationale for public provision, care should be taken to ensure that public provision results in a greater (that is, closer to optimal) supply than would be the case with just private provision.

- *Marginal Cost of Funds*. Because the World Bank is likely to be financing an increasing number of projects that are characterized by public costs and private benefits, the idea of incorporating the marginal cost of public funds in project appraisal should be reconsidered. Ideally, this should entail estimation of the marginal cost of funds at least in countries where the World Bank is investing in several projects or where it is likely to be especially large -- a task that could be most appropriately undertaken by the Research Department. Finally, for all projects, whether it is possible to calculate a rate of return or not, and whether a country-specific estimate of the marginal cost of funds is available or not, the analyst should measure the impact of the project on the budget and explain what forms of cost recovery have been considered.

- *Public Expenditure Reviews*. Wherever possible, the World Bank should allocate resources to reviews of sectoral expenditure programs *before* embarking on the appraisal and financing of specific projects. Indeed, if a sectoral review has been undertaken, financing a time-slice of the program may be the most effective use of World Bank funds.

If history is any guide, proposals such as these are unlikely to make much headway without a change in the structure of internal incentives. At a minimum, a reinstatement of a central projects unit to both provide assistance to project analysts and exert a degree of quality control would seem to be required.

ENDNOTES

1. Furthermore, if there is any added distortion from the public sector's need to raise funds, the return to the public investment will be negative.

2. If the good is private but is not currently produced privately, then one would need to compare public provision with sale of project description (e.g., blueprints) to the private sector.

3. Alternatively, it may be argued that the current level of private-sector provision represents the profit-maximizing amount *given* the costs imposed by, *inter alia*, government-induced distortions. Then the appropriate comparison should be between the net benefits of the project and removing those distortions.

4. If the government provides a service that taxpayers would have otherwise purchased on their own, then the spending would be a perfect substitute for disposable income. By contrast, if marginal government spending provides no benefits to taxpayers, there is an income effect from the balanced budget spending operation that counters the substitution effect (Browning, p. 18).

5. The more progressive the tax change, the greater the marginal welfare cost. Raising additional revenue by increasing the rates of progressive taxes (e.g., federal income taxes) implies large increases in marginal tax rates (Browning, p. 19).

6. The study reviewed 431 projects for which Project Completion Reports assigned ratings during the period July 1992 - October 1994.

7. Regression analysis of infant mortality on various types of public medical expenditures showed that expenditures on safe water and immunization had a much higher impact than expenditures on public-provided doctors.

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